

# Notice of Allowability

Application No.

09/694,586

Examiner

Benjamin R. Bruckart

Applicant(s)

BLOCK ET AL.

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## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the interview of 7-12-05 with an email.
2. ☒ The allowed claim(s) is/are 1-2, 4-31 renumbered to 1-30.
3. ☒ The drawings filed on 23 October 2000 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

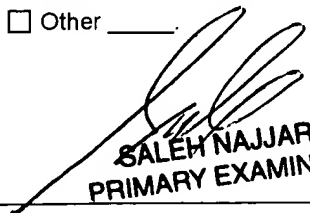
\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 7-12-05.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
**SALEH NAJJAR**  
PRIMARY EXAMINER

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview and email with Scott Stinebruner on 7/12/2005, Reg. No. 38,323.

The application has been amended as follows:

In the claims:

1. (Currently Amended) A method of dynamically modifying a cluster communication parameter in a clustered computer system, the method comprising:

(a) initiating a cluster communication parameter modification by transmitting a message to a plurality of nodes in the clustered computer system;

(b) locally confirming, within each node, receipt of the message by each of the plurality of nodes;

(c) in response to confirming receipt of the message by each of the plurality of nodes, invoking a local cluster communication parameter modification operation on each node;

(d) transmitting from each node a status of the local cluster communication parameter modification invoked on that node;

(e) locally detecting, within each node, an unsuccessful status for the local cluster communication parameter modification on any node; and

(f) in response to detecting an unsuccessful status for any node, locally undoing, in each node for which the local cluster communication operation was performed, the local cluster communication parameter modification operation performed on that node;

wherein the cluster communication parameter is selected from the group consisting of heartbeat message time out, heartbeat acknowledgment message time out, heartbeat frequency or interval, heartbeat failure threshold, heartbeat acknowledgment failure threshold, receive/send timer ratio, maximum fragment size, message retry timer value, maximum message retry time, send queue overflow threshold, message send window size, and combinations thereof.

3. (Canceled).

7. (Currently Amended) An apparatus, comprising:

(a) a memory; and

(b) a program resident in the memory, the program configured to dynamically modify a cluster communication parameter on a local node among a plurality of nodes in

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a clustered computer system, the program configured to locally confirm, for the local node, successful receipt of an initiation message by each of the plurality of nodes, and a status for a local cluster communication parameter modification operation performed by each of the plurality of nodes, the program further configured to undo a local cluster communication parameter modification operation performed on the local node in response to detection of an unsuccessful status for a local cluster communication parameter modification on any node;

wherein the cluster communication parameter is selected from the group consisting of heartbeat message time out, heartbeat acknowledgment message time out, heartbeat frequency or interval, heartbeat failure threshold, heartbeat acknowledgment failure threshold, receive/send timer ratio, maximum fragment size, message retry timer value, maximum message retry time, send queue overflow threshold, message send window size, and combinations thereof.

12. (Currently Amended) A clustered computer system, comprising:

(a) a plurality of nodes coupled to one another over a network; and

(b) a plurality of programs, each local to a node among the plurality of nodes, each program configured to dynamically modify a cluster communication parameter on its respective local node, each program further configured to locally confirm, for its respective local node, successful receipt of an initiation message by each of the plurality of nodes, and a status for a local cluster communication parameter modification operation performed by each of the plurality of nodes, and each program further configured to undo a local cluster communication parameter modification operation performed on its respective local node in response to detection of an unsuccessful status for a local cluster communication parameter modification on any node;

wherein the cluster communication parameter is selected from the group consisting of heartbeat message time out, heartbeat acknowledgment message time out, heartbeat frequency or interval, heartbeat failure threshold, heartbeat acknowledgment failure threshold, receive/send timer ratio, maximum fragment size, message retry timer value, maximum message retry time, send queue overflow threshold, message send window size, and combinations thereof.

13. (Currently Amended) A program product, comprising:

(a) a program configured to dynamically modify a cluster communication parameter on a local node among a plurality of nodes in a clustered computer system, the program configured to locally confirm, for the local node, successful receipt of an initiation message by each of the plurality of nodes, and a status for a local cluster communication parameter modification operation performed by each of the plurality of nodes, the program further configured to undo a local cluster communication parameter modification operation performed on the local node in response to detection of an unsuccessful status for a local cluster communication parameter modification on any node; and

(b) a signal bearing medium bearing the program;

wherein the cluster communication parameter is selected from the group consisting of heartbeat message time out, heartbeat acknowledgment message time out, heartbeat frequency or interval, heartbeat failure threshold, heartbeat acknowledgment failure threshold, receive/send timer ratio,

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maximum fragment size, message retry timer value, maximum message retry time, send queue overflow threshold, message send window size, and combinations thereof.

19. (Currently Amended) A method of dynamically modifying a heartbeat parameter in a node among a plurality of nodes in a clustered computer system, the plurality of nodes including first and second nodes, the first node configured to send a heartbeat message to the second node, and the second node configured to send an acknowledgment message to the first node in response to receiving the heartbeat message, the method comprising:

(a) sending a heartbeat message from the first node to the second node, the heartbeat message indicating that a heartbeat parameter is to be modified; and

(b) deferring modification of the heartbeat parameter in the first node until receipt of an acknowledgment message sent from the second node to the first node that indicates that the heartbeat parameter has been modified in the second node;

wherein the heartbeat parameter is selected from the group consisting of heartbeat message time out, heartbeat acknowledgment message time out, heartbeat frequency or interval, heartbeat failure threshold, heartbeat acknowledgment failure threshold, receive/send timer ratio, and combinations thereof.

26. (Currently Amended) An apparatus, comprising:

(a) a memory; and

(b) a program resident in the memory and configured to dynamically modify a heartbeat parameter in a first node among a plurality of nodes in a clustered computer system by sending a heartbeat message to a second node among the plurality of nodes that indicates that the heartbeat parameter is to be modified and thereafter deferring modification of the heartbeat parameter in the first node only after receiving an acknowledgment message from the second node indicating that the heartbeat parameter has been modified in the second node;

wherein the heartbeat parameter is selected from the group consisting of heartbeat message time out, heartbeat acknowledgment message time out, heartbeat frequency or interval, heartbeat failure threshold, heartbeat acknowledgment failure threshold, receive/send timer ratio, and combinations thereof.

31. (Currently Amended) A program product, comprising:

(a) a program configured to dynamically modify a heartbeat parameter in a first node among a plurality of nodes in a clustered computer system by sending a heartbeat message to a second node among the plurality of nodes that indicates that the heartbeat parameter is to be modified and thereafter deferring modification of the heartbeat parameter in the first node only after receiving an acknowledgment message from the second node indicating that the heartbeat parameter has been modified in the second node; and

(b) a signal bearing medium bearing the program;

wherein the heartbeat parameter is selected from the group consisting of heartbeat message time out, heartbeat acknowledgment message time out, heartbeat frequency or interval, heartbeat

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failure threshold, heartbeat acknowledgment failure threshold, receive/send timer ratio, and combinations thereof.

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In the specification:

Please replace the first paragraph of page 1 with the following:

**Cross-Reference to Related Applications**

This application is related to U.S. Patent Application S/N 09/694,599, filed on even date herewith by Timothy Roy Block et al., entitled "DYNAMIC MODIFICATION OF FRAGMENTATION SIZE CLUSTER COMMUNICATION PARAMETER IN CLUSTERED COMPUTER SYSTEMS", the disclosure of which is incorporated by reference herein.

### **REASONS FOR ALLOWANCE**

The following is an examiner's statement of reasons for allowance:

Independent Claims 1, 7, 12, 13, 19, 26, and 31 among other things teach the limitation “dynamically modifying a cluster communication parameter by initiating a cluster communication parameter modification by transmitting a message to a plurality of nodes; locally confirming within each node, receipt of the message and invoking the change; transmitting from each node a status of the local cluster communication parameter modified; locally detecting within each node an unsuccessful status and in response to an unsuccessful status, locally undoing in each node the operation performed on the local cluster communication parameter; wherein the cluster communication parameter is selected from the group consisting of heartbeat message time out, heartbeat acknowledgment message time out, heartbeat frequency or interval, heartbeat failure threshold, heartbeat acknowledgment failure threshold, receive/send timer ratio, maximum fragment size, message retry timer value, maximum message retry time, send queue overflow threshold, and message send window size” in a clustered computer system environment. Further defining that parameter as a heartbeat parameter and synchronizing nodes to the same parameter settings in combination with the dependent claims 2, 4-6, 8-11, 14-18, 20-25, 27-30.

The prior art does not teach the cited limitation.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

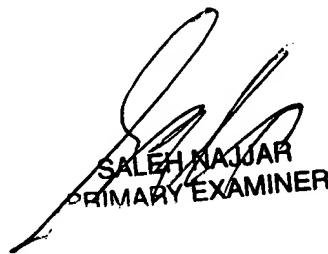
### **CORRESPONDANCE INFORMATION**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin R Bruckart whose telephone number 571-272-3982. The examiner can normally be reached on 8:00-5:30 PM with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Saleh Najjar can be reached on (571) 272-4006. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-3982.

Benjamin R Bruckart  
Examiner  
Art Unit 2155  
brb

  
SALEH NAJJAR  
PRIMARY EXAMINER